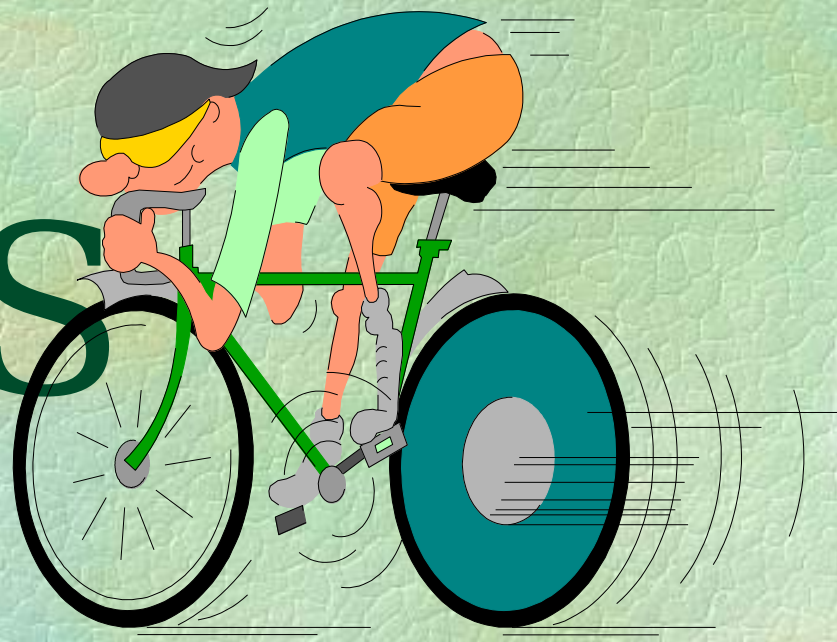


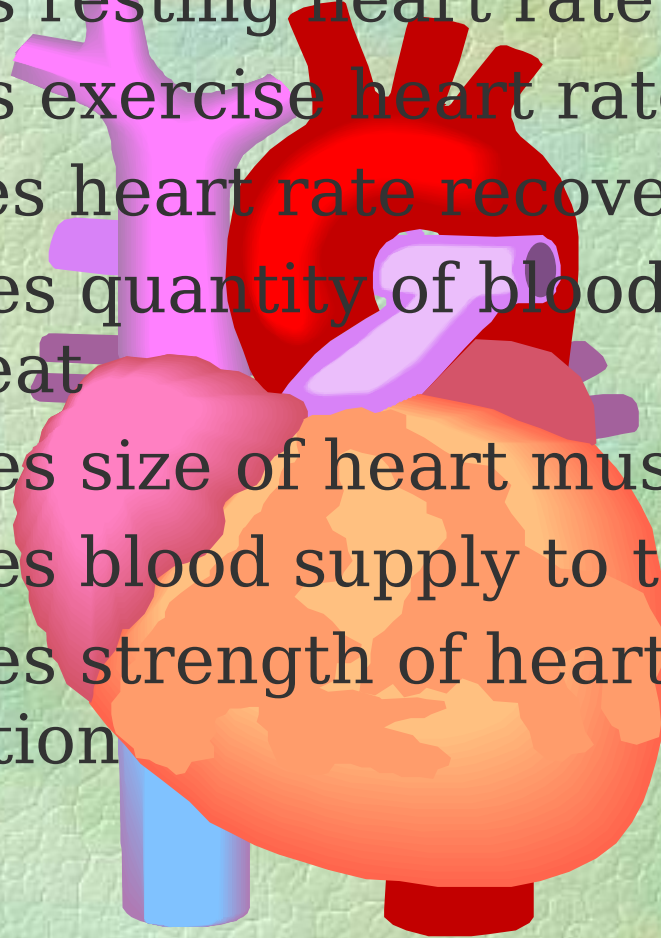
FITNESS FOR OUR FORCE!!

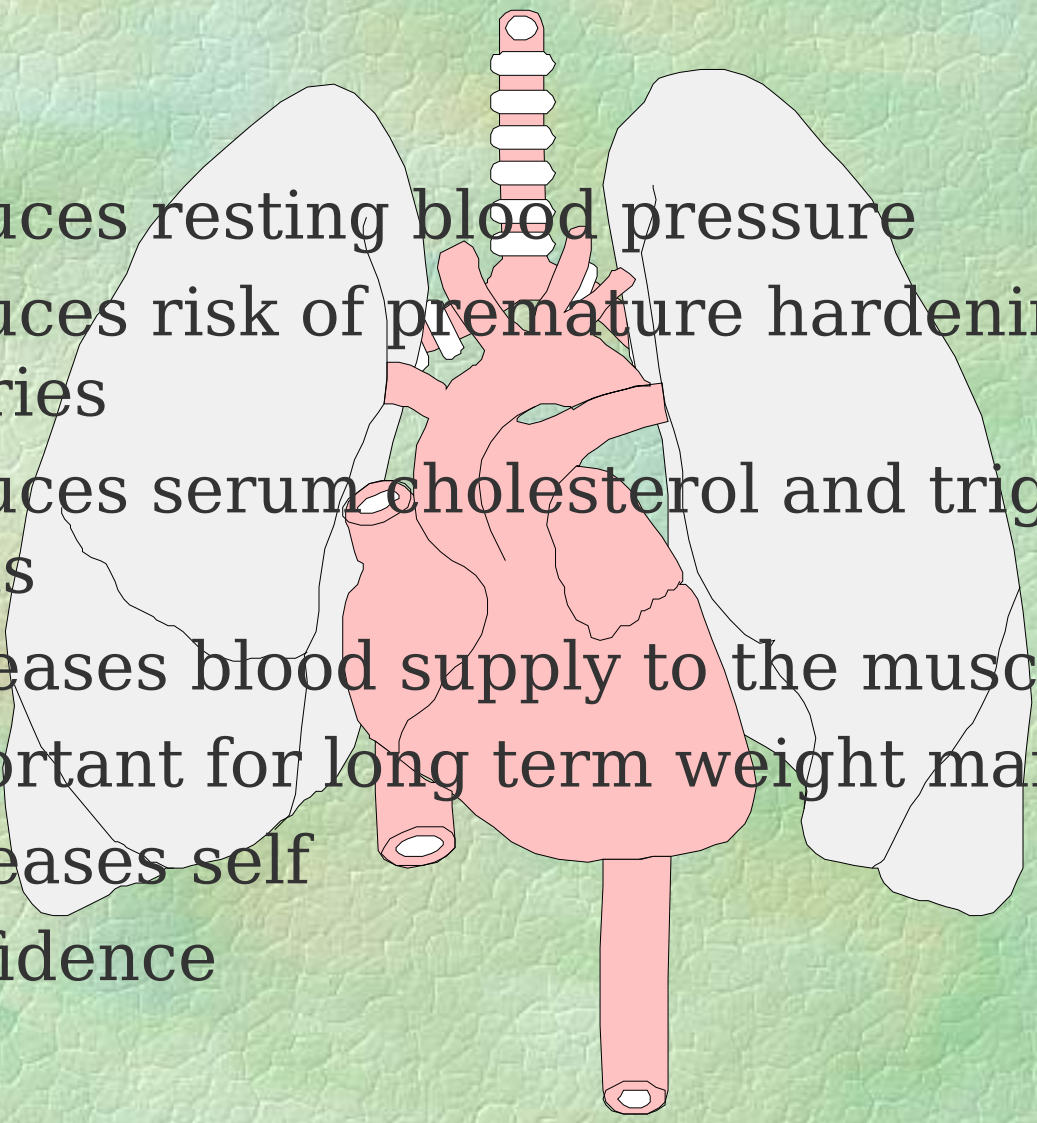


Lesson 1

BENEFITS OF EXERCISE

- ✿ Reduces resting heart rate
- ▢ Reduces exercise heart rate
- ▢ Improves heart rate recovery
- ▢ Increases quantity of blood pumped per heart beat
- ▢ Increases size of heart muscle
- ▢ Increases blood supply to the heart
- ▢ Increases strength of heart muscle contraction



- 
- An anatomical diagram of the human heart and lungs. The heart is shown in a reddish-pink color, with its four chambers (right and left atria and ventricles) clearly visible. It is positioned centrally, with the lungs on either side. The lungs are depicted in a light gray color with a textured, spongy appearance. The trachea (windpipe) is shown as a vertical tube with cartilaginous rings, colored in a light pink/white. The main blood vessels (aorta and pulmonary arteries/veins) are shown extending from the heart. The entire diagram is set against a green background with a subtle, wavy texture.
- Reduces resting blood pressure
 - ▢ Reduces risk of premature hardening of the arteries
 - ▢ Reduces serum cholesterol and triglyceride levels
 - ▢ Increases blood supply to the muscles
 - ▢ Important for long term weight management
 - ▢ Increases self confidence

👉 Decrease risk of CVD & other major illnesses

- ☐ Improved sleep
- ☐ Increased endurance/stamina
- ☐ Healthy complexion
- ☐ Increased flexibility and strength
- ☐ Increased oxygen to tissues
- ☐ Decrease stress levels
- ☐ Increase in energy
- ☐ Increase in job performance

SURGEON GENERAL'S REPORT

The Surgeon General has
determined that lack of
physical activity is
detrimental to your health.



The **BEST** reason of all to exercise regularly,



It just makes you feel good!

COMPONENTS OF FITNESS

HEALTH RELATED:

- ▢ Cardiovascular endurance
- ▢ Muscular flexibility
- ▢ Body composition
- ▢ Muscular strength and endurance
- ▢ Healthy diet
- ▢ Rest and Recovery
- ▢ Stress management

AEROBIC METABOLISM

🐸 *Requires Oxygen*

- ▢ Cardiovascular- Increases Aerobic Function, Burns Calories, Decreases Body Fat, Proven Health Benefits



AEROBIC SYSTEMS

- ☞ Assist in the Performance of Activities That Require Sustained Effort
- The Intensity of the Exercise Is Lower Than That of Anaerobic Exercises However Unlike Anaerobic Exercises Aerobic Exercises Can Be Sustained for Longer Period of Time
- Aerobic Exercises Condition the Cardiovascular System

ANAEROBIC METABOLISM

- ***Does Not Require Oxygen***
- Short Sprints, Weight Lifting
- Quick, Explosive and of Very Short Duration



ANAEROBIC SYSTEMS

- ☞ Assist in the Performance of Quick, Explosive Activities That Are of Short Duration
- The Intensity of Anaerobic Exercises Is Greater Than That of Aerobic Exercises However the Intensity Can Not Be Maintained --Except for a Very Brief Amount of Time
- Anaerobic Exercises Condition the Skeletal System

CARDIOVASCULAR FITNESS



OXYGEN CONSUMPTION

- **Vo₂ Max** - the Maximum Amount of Oxygen Consumed Per Unit of Time (ml/kg of body wt/minute)

CARDIOVASCULAR FITNESS

- How do you get cardiovascular fitness and how do you keep fit once you're there?



FITT PRINCIPLE

- 👉 **F- FREQUENCY**
of exercise
- ▢ **I- INTENSITY**
of exercise
- ▢ **T- TIME** spent
in exercise
- ▢ **T- TYPE** of
exercise



FREQUENCY



- Begin with 3 days per week, progress to 5 to 6 days per week.

INTENSITY



- 60 to 90% of an age predicted maximum heart rate.
- $220 - \text{age} = \text{maximum heartrate (MHR)}$.
- ▢ $\text{MHR} \times 60\%$
- ▢ $\text{MHR} \times 90\%$
- ▢ **$220 - \text{age} - \text{RHR} \times .60 \text{ \& } .80 + \text{RHR}$**
- ▢ (Will not apply to individuals on medication that affect heart rate)

TIME

the

the

Time is dependent on
intensity and goal of
activity.

LOW INTENSITY

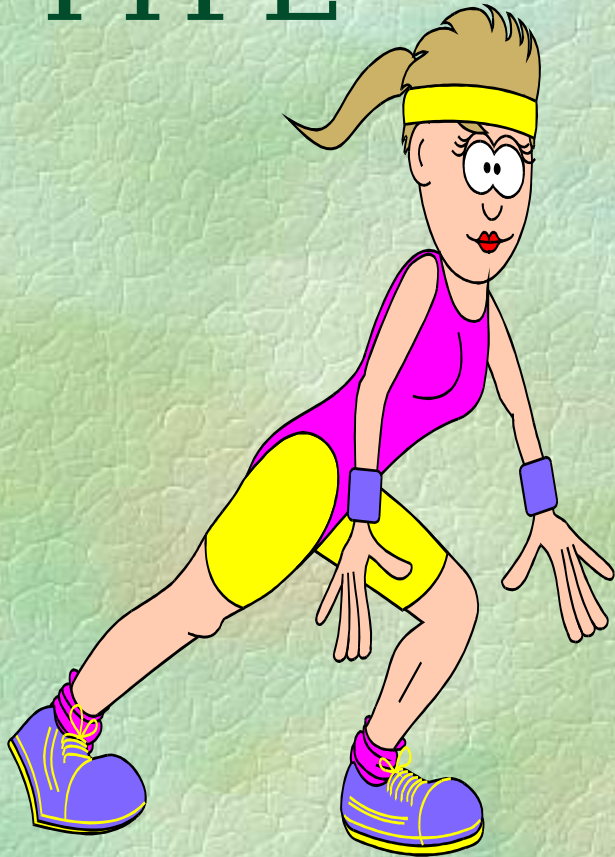
70% to 75% = 45 to 60 minutes

HIGH INTENSITY

85% to 90% = 20 to 30 minutes

** Heart Rate should be at least 150 for most individuals

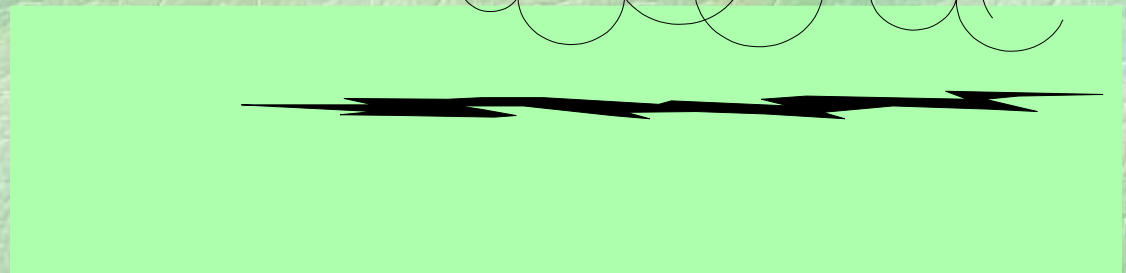
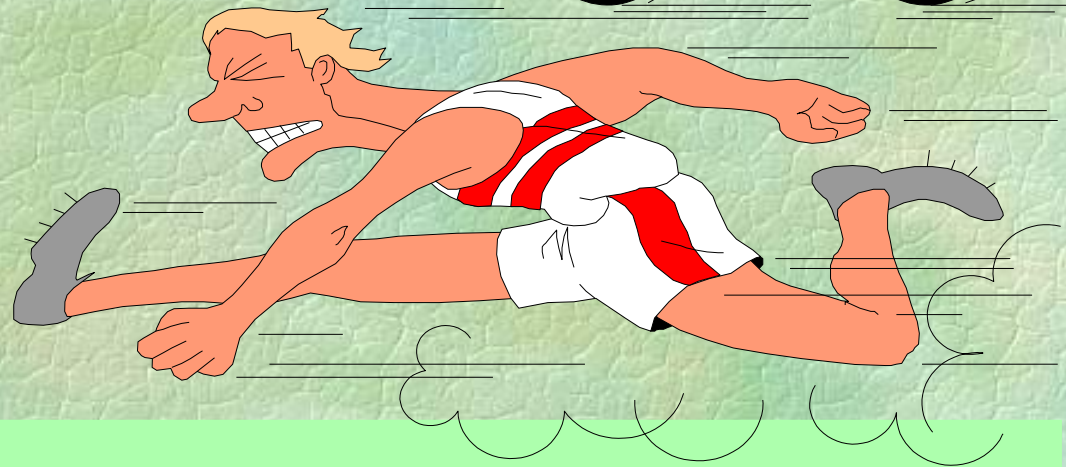
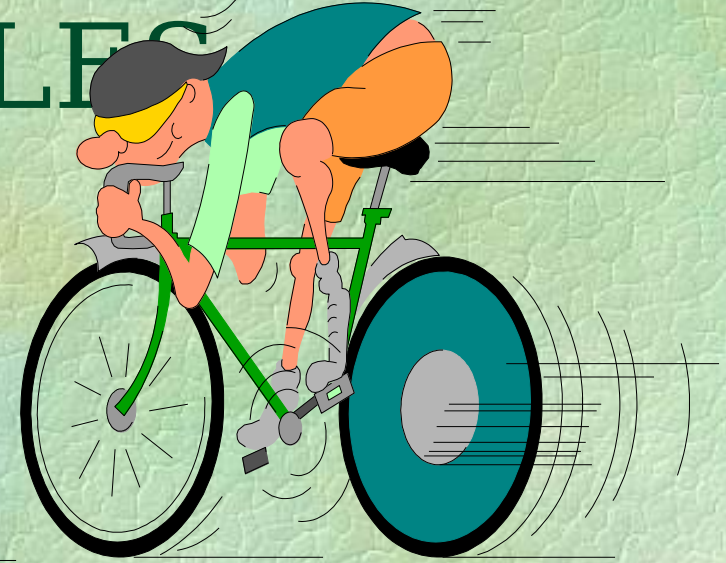
TYPE



🐸 Anything that involves the large muscle groups and is rhythmic in nature.



GOOD EXAMPLES



BAD EXAMPLES



WARM UP PHASE

🕒 5-10 minutes

- Mental and physical preparation
- Slowly elevates heart rate
- Increase blood flow to the muscles
- Warms up the body
- Decreases injury potential
- Type of warm up exercises

COOL DOWN PHASE

🐼 5-10 minutes

- ☐ Slowly decrease heart rate
- ☐ Keep legs moving
- ☐ Prevents blood pooling into the legs
- ☐ Prevent rapid drop in blood pressure
- ☐ Types of cool down

HEART RATE

- How Fast the Heart Is Beating
- Number of Beats Per Minute
- The Equation $220 - \text{Age}$, Provides an Approximation of the Maximum Heart Rate in Healthy Men and Women.

FOUR SAFE WAYS TO MONITOR EXERCISE INTENSITY

- ▢ Heart Rate
- ▢ Talk Test
- ▢ Rating of Perceived Exertion
- ▢ Signs and Symptoms



HOW TO CHECK YOUR PULSE

Heart Rate & Palpation

- The major arteries commonly used to measure heart rate are...
 - the carotid artery located on the neck
 - the radial artery located on the thumb side of the wrist joint (this is the most reliable) ...

- You should press gently with your finger tips over one of these sites...
- count the beats for one minute...

(To save time you can count for 15 sec. and multiply by 4 or for 10 sec. and multiply by 6.)

The number of beats per minute
gives you an accurate heart rate



Don't use your
thumb!!

(only your index and
middle fingers)

ACSM FITNESS STANDARDS

MALES

FEMALES

AGE EXCELLENT POOR

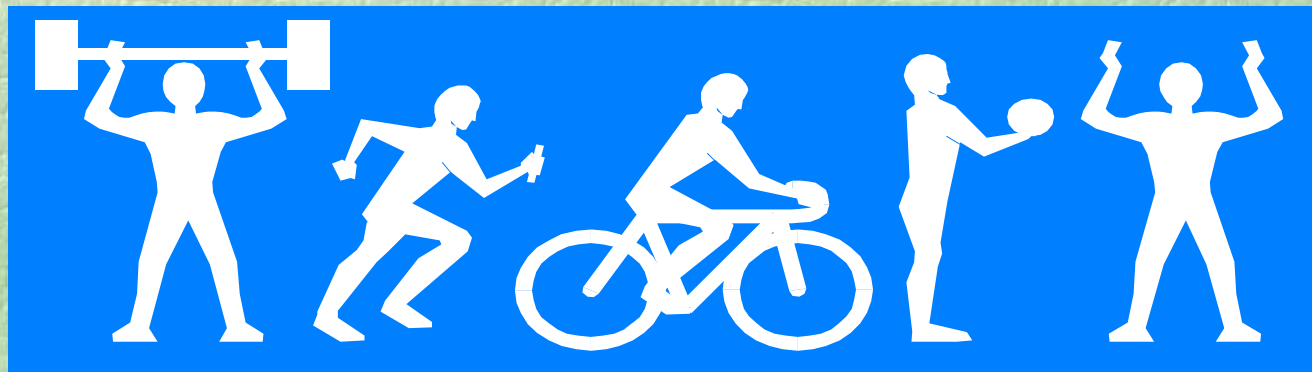
EXCELLENT POOR

20 - 29	>51	<39
30 - 39	>48	<36
40 - 49	>46	<34
50 - 59	>42	<30
60 +	>40	<28

>42	<30
>39	<28
>37	<26
>33	<22
>33	<22

AF FITNESS STANDARDS

AGE	FEMALES	MALES
<24	27	35
25 - 29	27	34
30 - 34	27	32
35 - 39	26	31
40 - 44	26	30
45 - 49	25	29
50 - 54	24	28
55 - 59	22	27



ACTIVITY PYRAMID

“Exercise Lite
Recommendation”

MUSCULAR FITNESS



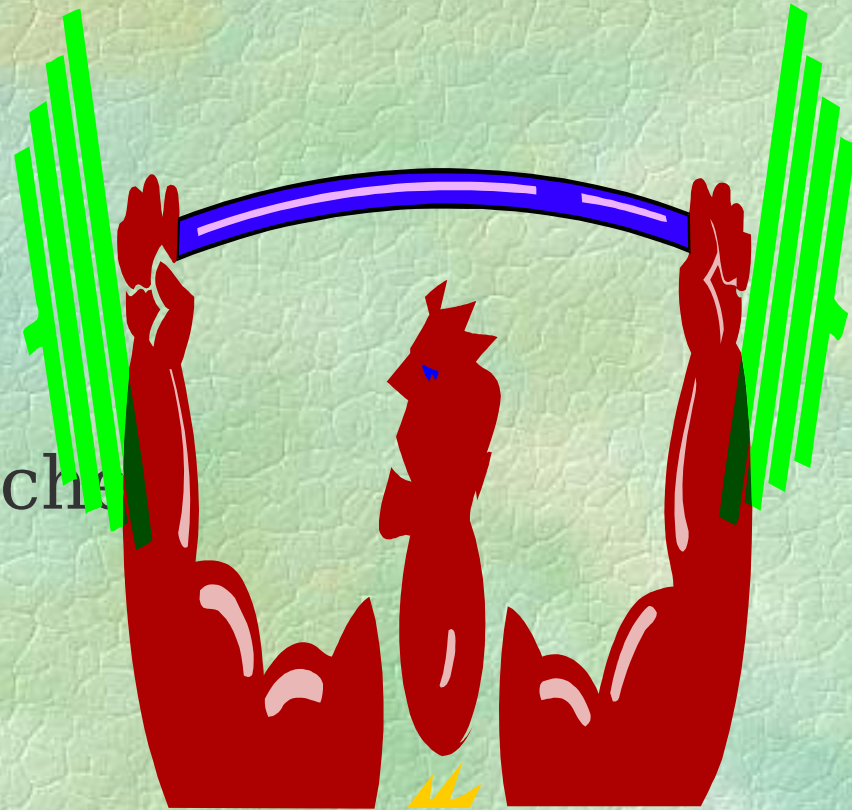
Do you really
need
to do strength
training to be
FIT?

Strength Training

is working out against moderate resistance to tone and build muscles.

Benefits

- ☛ Use it or lose it
- ☐ Injury prevention
- ☐ Fat loss
- ☐ Tone and Trim -lose inches
- ☐ Strong muscles
- ☐ Stronger back
- ☐ Balance fitness



MECHANISMS FOR IMPROVING MUSCLE FUNCTION

- Neural - Central (first 6 weeks)
- Peripheral - Muscular (effects after 6 weeks)

OVERLOAD PRINCIPLE

To become stronger a muscle must exert a force against a resistance greater than what is normally encountered



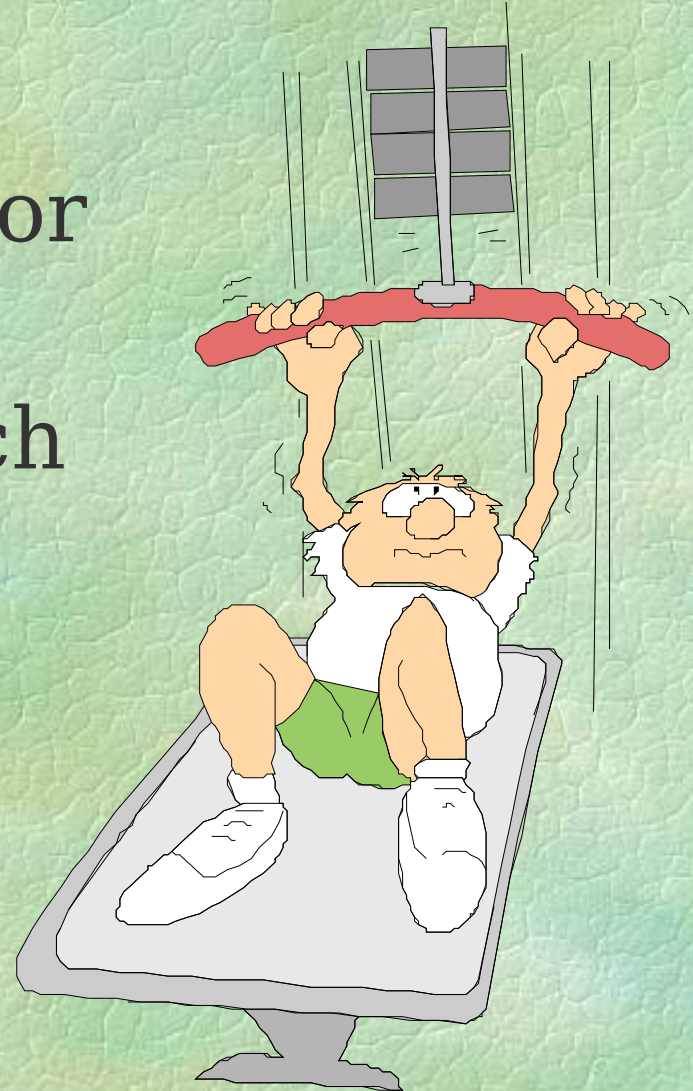
TYPES OF RESISTANCE TRAINING:

- Resistance Bands
- Calisthenics
- Free weights
- Weight machines



ACSM GUIDELINES FOR STRENGTH CONDITIONING

- 8-10 exercises for major muscle groups
- 8-12 repetitions of each exercise
- Moderate Intensity
- 1 set
- 2 times per week



PROGRESSION

- ☞ Strength gains can be seen in 8 to 12 weeks
- ▢ Can be maintained with only 1 time per week
- ▢ 8 to 12 repetitions, when 8 to 12 repetitions are reached, increase the resistance



GENERAL PRINCIPLES OF STRENGTH CONDITIONING

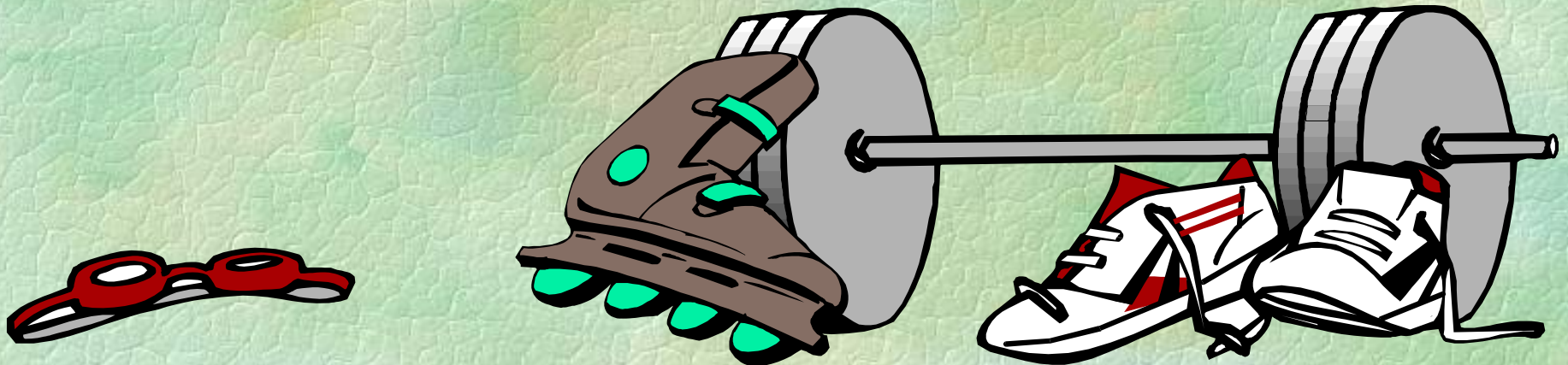
- ☞ Stretch &/or aerobic exercise first
- ☞ Slow progression prevents injury
- ☐ Cross train to allow muscle to rest & rebuild
- ☐ Maximum strengthening 70% of 1 RM
- ☐ Pain is a warning---stop exercising
- ☐ Cool down/stretch after exercise

PROGRAM DESIGN

<u>Intensity</u>	<u>Outcome</u> <u>Sets</u>	<u>Reps</u>
Heavy	Strength 3-5	3-8
Moderate	Hypertrophy 3-6	8-12
Light	Endurance 2-3	12-15+

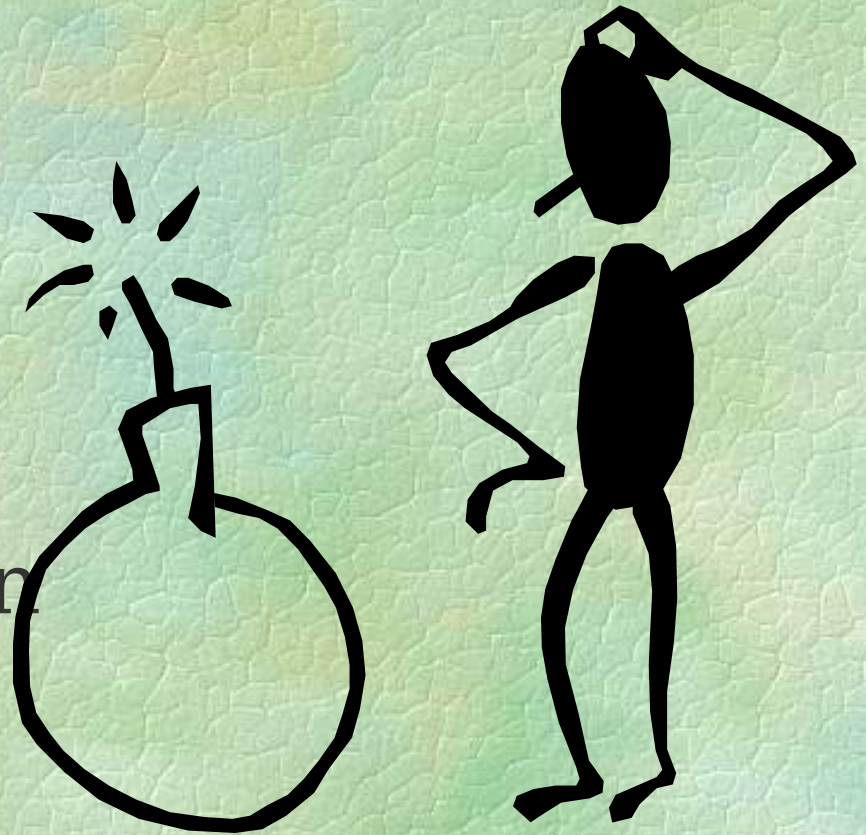
CROSS TRAINING

- Prevents boredom
- Prevents overuse injuries
- Allows existing injuries to heal



SAFETY GUIDELINES

- Breathing
- Technique
- Grip
- Body Position
- Range of Motion



FLEXIBILITY



STRETCHING PHASE

- ☞ Continues warm up & cool down process
- ☐ Helps avoid muscle & joint soreness
- ☐ Prevent injury
- ☐ Increases flexibility
- ☐ Relaxes the mind and tunes the body
- ☐ Reduces muscle tension
- ☐ Increases range of motion
- ☐ Improve circulation
- ☐ Increases exercise performance

GOALS OF STRETCHING

- ▣ PREVENT INJURY
- ▣ PROMOTE FLEXIBILITY
- ▣ DECREASE TENSION



Types of flexibility

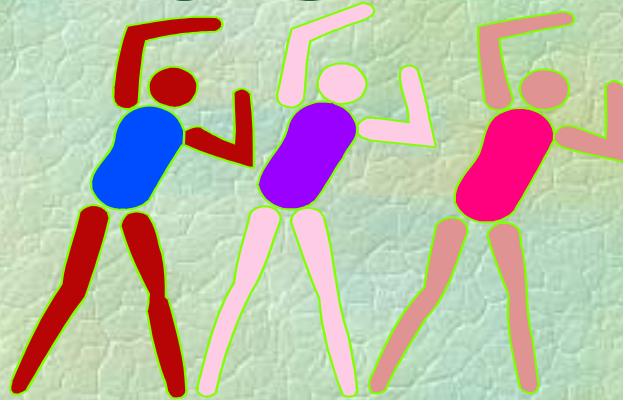
- Flexibility refers to the range of motion about a joint. There are three types of flexibility.
 - 1. Static Active Flexibility: The range of movement in slow, controlled internal muscular activity.
 - 2. Dynamic Active Flexibility: The range of movement in strong, fast internal muscular activity.
 - 3. Passive Flexibility: The range of movement required when an external force is applied.

HOW TO STRETCH !



- ☞ RELAXED & SUSTAINED MOVEMENT
- ☐ HOLD MILD TENSION, NOT PAIN
- ☐ BE IN CONTROL
- ☐ BREATHE SLOW
- ☐ HOLD STRETCH 20-30 SECONDS
- ☐ DO NOT BOUNCE
- ☐ IF IT HURTS, STOP !!

WHEN TO STRETCH !!

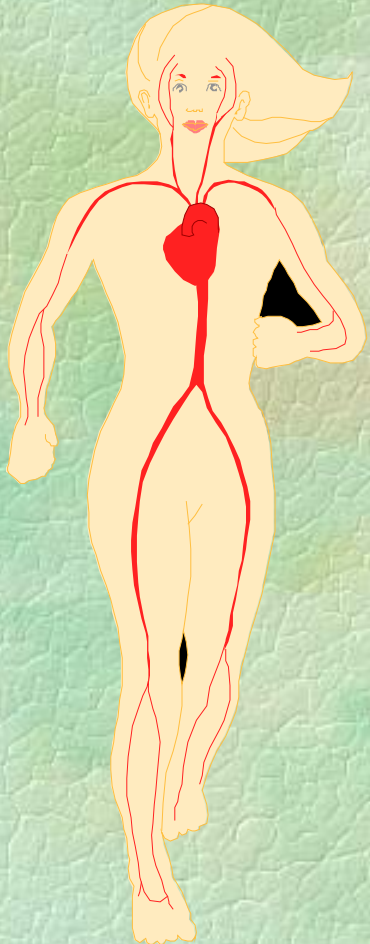


- ▣ STRETCH WHEN MUSCLES ARE WARM.
- ▣ LIGHT STRETCHES BEFORE ACTIVITY

Flexibility stretches

- ✿ Neck: Forward bends, rotations, side bends
- Shoulder: Arm circles, arm rotations, shoulder circles, arm-overs, arm reaches, pull-throughs
- Elbow: Tricep stretches
- Lower arm: Wrist bends
- Hips: Quad stretches, hamstring stretches, front strides, lateral strides
- Knees: Quad stretches, hamstring stretches
- Ankles: Achilles stretches, ankle extenders

YOUR EXERCISE PROGRAM



- 👉 Warm-up- 3 to 5 minutes
- ☐ Stretching- After warm-up and after exercise
- ☐ Aerobic Component- 20 to 60 minutes
- ☐ Strength Training
- ☐ Cool-down- About 5 minutes or until heart rate is 120 bpm or less

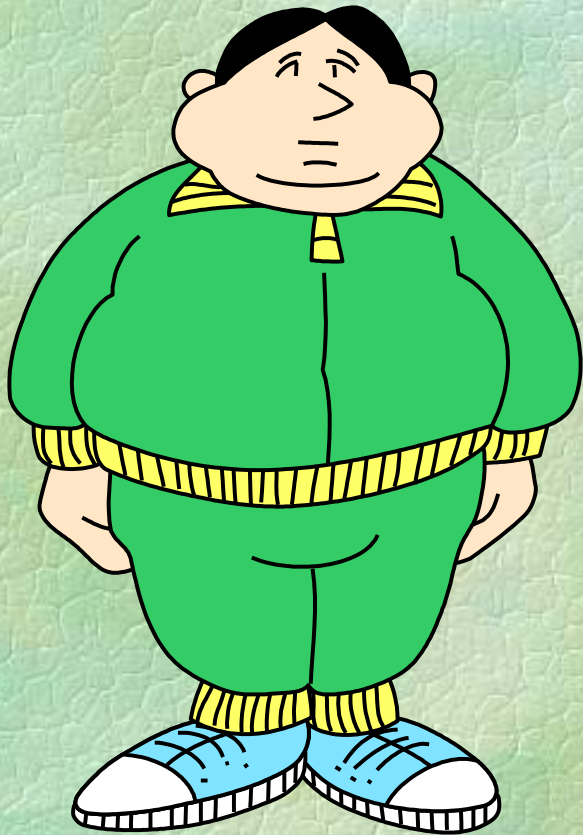
EXERCISE HINTS

- Choose an activity that you enjoy/tolerate
- Choose the time of day that works for you
- Mix it up
- Cross Train
- Monitor your heart rate

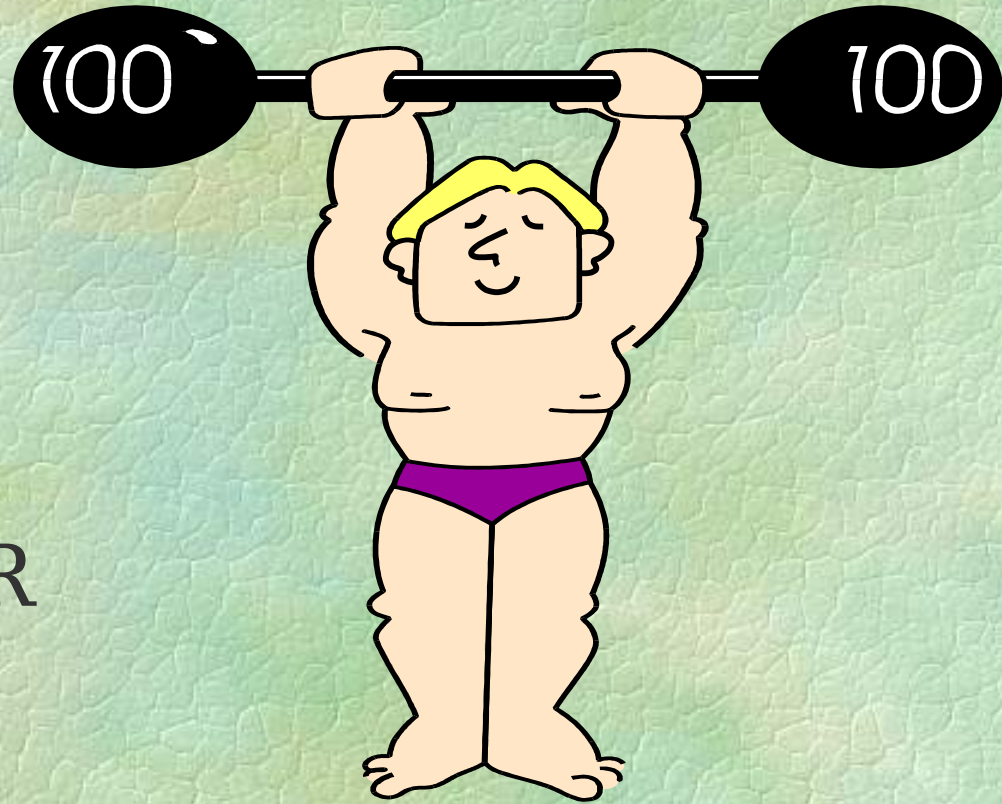
BODY COMPOSITION



FAT VS. MUSCLE



OR



THERE IS A RELATIONSHIP BETWEEN
STRENGTH AND METABOLISM

Muscle uses energy at rest, fat does not!

BODY COMPOSITION

- Lean Body Mass- Weight of all body tissue except fat
- Required as an energy store, protection of internal organs, component of nerves and cell membranes, and insulation against heat loss
- Essential fat stores:
Males: 3 to 5%
Females: 11 to 14%

There are three ways to assess body composition

- ▢ hydrostatic weighing
- ▢ measurement of bioelectric impedance
- ▢ measurement of skinfold thickness

measurement of bioelectrical impedance

iS resistance to the flow of electrical
current through the body between
selected points

AIR FORCE BODY FAT STANDARDS

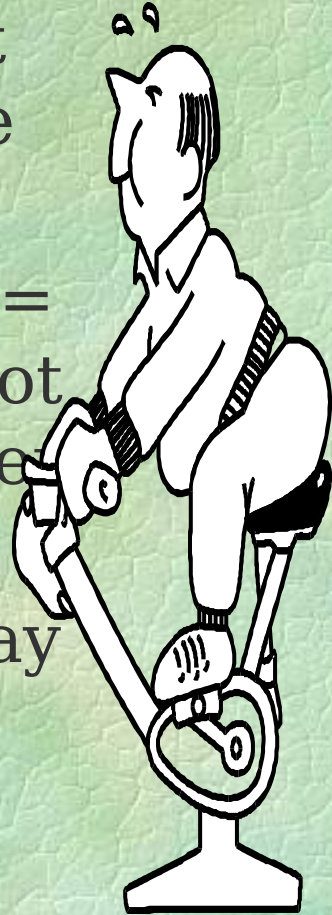
AGE	FEMALE	MALE
29 AND YOUNGER	28%	20%
30 AND OLDER	32%	24%

ACSM BODY FAT STANDARDS

	FEMALES	MALES
NORMAL	22 - 25%	16 - 18%
OBESE	ABOVE 32%	ABOVE 25%

MYTHS

- ❖ SPOT REDUCTION- When fat comes off, it comes off throughout the body not just the exercised area
- ❑ RUBBER SUITS/SAUNAS- Sweating hard = working hard...Weight lost in this way is not fat, but rather a significant amount of water
- ❑ The hotter you are, the more fat melts away
- ❑ VIBRATORS- Fat cannot be shaken off, it must be burned off in the muscle tissue- This means work
- ❑ Muscle turns into fat-- NOT!



MOTOR SKILL-RELATED FITNESS

- ▢ **Includes qualities such as speed, power, balance, agility, and coordination that can be developed to better performance in sports and other physical activities.**

EXERCISE AND SAFETY

👉 CLOTHING-

- Fit comfortably and allow for free movement
- Geared for air temperature and humidity
- No rubber suits
- Avoid nylon or tight clothes that interfere with the cooling mechanism of the body or obstruct normal blood flow

measurement of skinfold thickness

- measurement of the fat under the skin

continued

🐾 SHOES-

- Properly fitting
- Geared for the specific activity i.e..
walking, running, aerobic and court shoes
- Offer good lateral stability, should not lean to either side when placed on a flat surface
- Bend at the ball of the foot not the midfoot
- Be replaced every 500 miles



HYDRATION

- ☞ Drink before, during and after exercise
- ☐ Before: Minimum 2 cups of water 15 to 20 minutes prior to exercise
- ☐ During: One cup every 15 minutes during exercise
- ☐ After: More than thirst requirement
Each pound of weight lost should be replaced with 16oz. of fluid
- ☐ Water should be cold, to aid in absorption from the stomach



OVER TRAINING

🦋 PREVENTION IS THE BEST TREATMENT

- ▢ In cases of acute injury use:
- ▢ R= REST
- ▢ I= ICE
- ▢ C= COMPRESSION
- ▢ E= ELEVATION

CONCLUSION

- ✿ **CARDIOVASCULAR**- Increases aerobic function, burns many calories, decreased body fat, proven health benefits
- ▢ **STRENGTH**- Increased metabolism, decreased body fat, improve quality of life
- ▢ **FLEXIBILITY**- Maintain range of motion, as we age, decreased risk of injuries

? QUESTIONS ?

